

# Django E-commerce Platform Development Report

## 1. Introduction

This project is aimed at constructing a user-friendly, efficient, and scalable online shopping platform to cater to the burgeoning demands of the e-commerce market.

## 2. Development Methods and Technology Selection

- **Backend Framework:** Django 3.2
- **Programming Language:** Python 3.8
- **Database:** SQLite is utilized for its lightweight features during the initial development and testing phase, containing 4,000 product entries.
- **Front-end Technologies:** HTML, CSS, JavaScript, jQuery, and the Bootstrap framework have been employed to develop responsive user interfaces.
- **User Experience Design:** A simple and intuitive design approach has been adopted to ensure that users can navigate and operate the platform with ease.
- **Functional Implementation:** Django's built-in views and template systems are harnessed to facilitate page navigation, button responses, and CRUD (Create, Read, Update, Delete) operations.

## 3. Main Functions and Implementation Details

Product Browsing and Searching: Implemented through Django's QuerySet API, this functionality allows multi-field-based searches, along with price range filtering and sorting capabilities.

- **Shopping Cart and Order Processing:** Additions to the shopping cart, quantity adjustments, item removal, and checkout processes have been effectively incorporated.
- **User Authentication System:** In conjunction with Django's native authentication system and decorators, it manages user logins, logouts, and provides role-based page access control.
- **Administrator Interface:** Django admin is leveraged to provide administrators with an intuitive interface for managing products, orders, and user data.
- **Data Visualization:** By integrating the Plotly.js library, product price distributions and sales data are depicted through line charts, bar charts, and pie charts.
- **Error Handling:** The platform employs Django's exception handling framework and a bespoke error handling mechanism, ensuring users receive proper feedback and guidance during error occurrences.

## 4. Testing and Quality Assurance

- **Unit Testing:** Comprehensive unit tests have been carried out on models, views, forms, and template tags.
- **Behavioral Testing:** The Behave framework facilitates behavior-driven

development testing to verify that application functionalities align with user stories and business objectives.

- **Performance Testing:** Performed on 4,000 product entries to enhance query efficiency and page load times.

## 5. User Interface and URL Mapping

- **Product Details Page** (/product\_detail/): Allows users to browse, add to cart, filter, and search for products.
- **Administrator Interface** (/product\_modifications/): Post-login, administrators are directed here, with clickable histograms navigating to /creator\_products/ and /last\_modified\_by\_creator/.
- **Category Details Page** (/category/<int:category\_id>/): Showcases products within a specific category.
- **User Login Page** (/login/): Facilitates user authentication with post-login navigation according to user permissions.
- **Shopping Cart Page** (/view\_cart/): Where users can manage cart items and proceed to checkout.
- **Checkout Page** (/checkout/): Authenticated users complete their order here, and successful transactions redirect to the payment success interface (/payment\_success/).
- **Administrators View Orders** (/view\_paid\_orders/): Administrators can review order details post-user payment here.

## 6. Implementation and Installation

Use PythonAnywhere to deploy.

## 7. Use and Maintenance

- **User Manual:** A comprehensive guide (Read.me) is available for users and administrators to navigate the site's functions.
- **Technical Support:** A dedicated channel is established to offer prompt assistance for troubleshooting.
- **Additional Assistance:** Users and administrators receive login prompts and guidance for accessing various functions.

## 8. Conclusion

The developed platform stands as a robust solution that not only satisfies current market trends but is also poised to accommodate future growth and changes in the e-commerce landscape.